SCORPIONS OF SHANSI, NORTH CHINA

by

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The Scientific Expedition to Shansi made a survey at various localities in that province from April to June, 1942. Messrs. Yukiyasu Kiyosu, Keizô Yasumatsu and Hirozô Yamashita joined as members of the zoological division, and it was chiefly Mr. Yamashita, that the collection of many specimens of scorpions which I was asked to investigate was made. Although it is not from Shansi, but later I had an opportunity of examining many scorpions collected in Hopei Prov. by Mr. Taiji Imamura which served as a good comparative material. The bottled Shansi specimens are 43 including both adult and larva, all of which belong to the Eastern Asiatic Scorpions, Buthus martensii Karsch, 1879. I would like to congratulate Mr. Yamashita, the collector, for his hard labour of gathering many interesting specimens.

There are about 57 species known in genus Buthus with B. occitanus (Amoreux, 1789) 〔Sub: Scorpio〕 being the genotype, ranging from the coast of the Mediterranean, India, Malay Peninsula to China including Manchuria and Mongolia, as well as the Zambesi district in the Ethiopian region.

Buthus martensii is found in Mongolia, Manchuria, Korea and Formosa (? ?), but its occurrence in Korea is said to be the result of an artificial transportation and the Formosan record is doubtful, the reason of which will be explained later.

The Chinese name is variously called as Hsieh-tzu, Ch'üan-hsieh, Ch'ai-tzu, P'i-pa-ch'ung, etc. Mr. Tomotarô Iwakawa (1906) reported that he had examined a specimen found in Shansi as well as those from other provinces of China, and I (1943) also described one female of this species which was given me by Mr. Soéjima in 1940. As this particular specimen was alive, I was able to keep it for about a month together with another living male which reached me. In other occasion, I once examined three females collected by Mr. Y. Hiraiwa; therefore judding from these and by the specimens in Mr. Yamashita's collection, I conclude that this scorpion must be common in various parts of Shansi

Mr. Kyûkichi Kishida made a detailed description of this species on specimens collected in Jehol, Manchuria, and I also made the same in 1943, but I shall not discuss this scorpion further in this article. As to the scientific appelation I should like to point out the spelling of martensii which should be with two i's and not with one i.

The so-called pecten or comb-like organ is paired appendages on the second preabdominal segment peculiar to the scorpions, and the number of the teeth of the pecten is a diagnosis by which specification may be easily made. It may be regarded as a secondary sexual character, but the spotted house scorpion Isometrus europaeus Linuaeus is excluded from this rule. Usually the number of teeth on both sides is the same, but sometimes we find on tooth less on one side. I counted the total number of teeth in 43 specimens, and found that a female has not more than 20 (16-20) on an average, while a male has usually more than 22. It is not correct to suppose that a larva has not many of them, but both adults and larvae I examined showed the maximum of 26 teeth while the minimum of 18 on one side of that organ.

According to Mr. Yamashita, one female among his collection has 18 larvae on her back in the condition of monogynopaedia. The measurements of his specimens are as follows (unit…mm):

number of specimens	sex	length of carapace and preabdomen	length of postabdomen	number of teeth of pecten right	left
1	adult female	23	29.5	18	19
2	young	7	7.5	23	24
3	〃	6.5	8	18	18

4	〃	7	8	20	19
5	〃	7	8.5	22	22
6	〃	6	8.5	24	24
7	〃	6	7.5	24	24
8	〃	5.5	7	23	23
9	〃	7	8	19	18
10	〃	5	7.5	23	24
11	〃	7.5	9	22	28
12	〃	7	8	22	23
13	〃	6	8	20	20
14	〃	6	8	19	19
15	〃	7	8	20	20
16	〃	7	9	22	23
17	〃	6	8	19	20
18	〃	5	8	23	22
19	〃	6	8.5	20	19

As the above table shows, the length of carapace and preabdomen of 18 larvae ranges from 5 to 7.5 mm, showing no secondary sexual character. Since the number of teech of pecten is defined into two groups: the one under 20 and the one over 22, we assume that 10 of them must be the young males and 8, the females.

In recent years Mr. Kyûkichi Kishida (1939) and Mr. Minoru Okinami (1939) independently made a report on the secondary sexual character of this species which I give credit to their careful observations. Judging from my own experience, the secondary sexual character is observed in a specimen which has a carapace and preabdomen over 11 mm; in other words, it is almost certain to distinguish a male from a female by the shape of chela in their chelicera. The male shows clearly the evagination and invagination at the proximal parts of the fingers, while the female is normal and shows nothing particular at this part. For a larva smaller than 11mm, we are able to distinguish its sex by the number of teeth in a pecten. It is from 5.5 to 6 mm long in the case of an adult male, while only about 5 mm in the female ; the latter has the same body length as the male or even longer. This trifle difference may be detected through experience. I consider it is the number of the teeth of a pecten and the shape of a chela that make it easiest to distinguish the male from the female in this species. Among specimens found in Shansi and those collected by Mr. Imamura in Hopei, there are some which have abnormal lateral eyes. Of the three eyes some specimens have the apical one much smaller than the rest, while another has only two on the lateral ocular prominence.

The occurrence of this species should not be overlooked as it is a class of harmful animals to a human race and other animals, yet, its venom is not so severe as has been supposed for long centuries. It is true that some lost their lives because of its venom, but such unfortunate cases are scarce, the effect of its venom, therefore, should be neither feared nor despised. I shall not go into details about the venom here, for Mr. Minoru Okinami (1939) has already made a useful synthesis on this species.

There is a specimen supposed to have come from Formosa but its authenticity is doubtful. According to "Honzō Kōmoku" this species is not originally found in Fukien. Buthus martensii must be considered as a boreal element and it is not found as native to those places. Its erroneous record from Formosa must be due to the fact that a noted dealer there placed on a shelf specimens obtained in North China or Manchuria labelling them as Buthus martensii and who obtained one of these specimens not reviewing its history thought it to be a native to Formosa.